From: MORASH, MELANIE [[HYPERLINK "mailto:morash.melanie@epa.gov"]]
Sent: Friday, August 24, 2018 8:03 AM
To: Mora, Rebecca; Shantal Der Boghosian
Cc: Shaffer, Caleb; Levine, Herb
Subject: EPA Comments - 2017 Annual Groundwater Monitoring and Remedial Progress Report for the Former TRW Microwave Site

Dear Shantal and Rebecca,

Thank you for submitting the *Annual Groundwater Monitoring and Remedial Progress Report, Former TRW Microwave Site, 825 Stewart Drive, Sunnyvale, California* (Report), prepared by AECOM Inc. (AECOM), dated May 3, 2018. The Report was prepared on behalf of Northrop Grumman Systems Corporation (Northrop). The Report presents the results of the groundwater monitoring program and summarizes the remedial activities conducted at the TRW Site in 2017.

General Comments:

EPA appreciates the groundwater monitoring work that Northrop and AECOM are conducting, in association with the long-term cleanup activities at the TRW Site. The Report's summary of the monitoring results of groundwater parameters indicates that remedial efforts continue to reduce contaminant mass at the TRW Site.

Specific Comments:

1. Section 3.1, Page 7, Second paragraph – Groundwater movement in groundwater Zone B2 is reported to the northwest based upon the potentiometric surface presented on Figure 7. However, the orientation of channelized flow is shown as trending north/northeast, which is consistent with the elevated levels of trichloroethene (TCE) in well T-10C. The groundwater flow direction mentioned in the text and as depicted on Figure 7 should be toward the north/northwest consisted with the trends of the preferred pathways and similar to that described for hydrostratigraphic units (HSUs) A and B1.

   Response: The gray shading corresponding to low permeability areas on Figure 7 was for Zone B1 HSU2 instead of Zone B2. The figure has been corrected to show the correct shading for low permeability areas in Zone B2.

2. Section 3.1, Page 7, Third paragraph – Changes in groundwater elevations, as presented, have no relevance if such changes are an artifact of changes in the benchmark survey conducted in January 2018. Stated changes in the elevation of the groundwater surfaces should reflect only subsurface conditions to allow for correct comparison of historical elevations.

   Response: The text has been changed to remove discussion of changes of groundwater elevations.

   "As discussed in Section 2.4.3, the Site wells were resurveyed during this reporting period. Therefore, groundwater elevations will not be compared to 2016 data."

2. Section 3.2.1, Zone A – Presented historical concentration ranges do not reference the time range. EPA recommends adding the time range, similar to the discussion for Zone B1.

   Response: The text has been updated to make it more clear that the referenced time range was between 2013 and 2017.

3. Section 3.2.2, Page 11, EAB Parameters, Last full sentence – Clarify punctuation in sentence to eliminate stating that the injection wells were injected with low dissolved oxygen concentrations.

   Response: As suggested, the punctuation in the sentence was changed, adding a comma between the words "injection" and "with."

   "This is supported by geochemical data indicating that reducing conditions conducive to EAB are still present in the EHC-L injection wells 5 years after injection, with low dissolved oxygen concentrations and elevated methane concentrations."

4. Section 4.0, Page 13, Last bullet – Clarify the statement to indicate that the referred activities have resulted in destruction of [some (or much) of] TCE mass associated with the former TRW Site source area. What amount of mass volume is being referred to?

   Response: The statement does not refer to a specific amount of mass, but rather that the data indicate that TCE concentrations have been reduced by EAB activities. The sentence has been revised to say, "... activities have resulted in reduction of TCE concentrations in groundwater..."

6. Section 4.0, Page 14, First bullet – The statement of *the existence on-site of a viable ongoing mechanism for ongoing contaminant mass reduction* appears to be contrary to the previous statement that *low TOC concentrations and microbial populations do not support annual monitoring*. Depleted organic carbon, very low DHC concentrations, detection of ethene only at trace concentrations, and increasing TCE concentrations at wells T-13A and T-14A indicate that mass reduction is not progressing. EPA understands that TCE concentrations in wells T-13A and T-14A are affected by the onsite migration of elevated TCE from an upgradient source. It is assumed that the intent of this bullet is to provide support of the proposed discontinuation of annual EAB monitoring. If so, EPA is open to discuss a reduction in annual EAB monitoring.

   Response: We agree that robust EAB is no longer occurring, based on the TOC concentrations and low microbial populations. Therefore, we recommend that EAB monitoring be reduced or discontinued.

7. Section 4.0, Page 14, Recommendations, Fourth bullet – See EPA's August 24, 2018 set of technical comments regarding the proposed destruction of well T-9B. Impact of the two gravel layers within the well screen should be explored further.

   Response: We agree that additional characterization near well T-9B to further explore the HSUs in that area would be beneficial and improve the site CSM.

Figures and Tables Comments:

1. Table 3 – Please clarify in notes the data qualifiers, F1, F2, and H.

Response: Definitions for data qualifiers were added to the footnotes for the table.

2. Appendix C, Well T-9B results – Two data lines above Oct-17 are identified as Jan-17 and another Jan-17. Please clarify this data.

   Response: The two Jan-17 samples were depth-discrete samples collected from the same well at different depths during the same event. The Appendix C table will be annotated to clarify this.

Next Steps:

Please review EPA's comments and submit a response-to-comments letter by October 31, 2018.

Sincerely,

Melanie

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References:

AECOM, 2018, *Annual Groundwater Monitoring and Remedial Progress Report, Former TRW Microwave Site, 825 Stewart Drive, Sunnyvale, California Well Installation Report, Former TRW Microwave Site, 825 Stewart Drive, Sunnyvale, California*. May.